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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/002,690	12/05/2001	Philip Gerard Cavanaugh		4679

7590 10/12/2006  
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EXAMINER
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HINES, JANA A

ART UNIT	PAPER NUMBER
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1645

DATE MAILED: 10/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/002,690	CAVANAUGH, PHILIP GERARD	
	<b>Examiner</b>	<b>Art Unit</b>	
	Ja-Na Hines	1645	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 05 May 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 75-96 is/are pending in the application.
  - 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 75-96 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
  - Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
  - Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
    - a) ☐ All    b) ☐ Some \* c) ☐ None of:
      - 1. ☐ Certified copies of the priority documents have been received.
      - 2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
      - 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Amendment Entry***

1. The amendment filed November 23, 2004 and May 5, 2006 have been entered. The examiner acknowledges the amendments to the specification. Claims 1-74 have been cancelled. Claims 75-96 are newly presented.

### ***Information Disclosure Statement***

2. The information disclosure statement (IDS) submitted on November 23, 2004 was entered. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

### ***Withdrawal of Rejections***

3. The following objections and rejections have been withdrawn in view of applicants' amendments:

a) The objection of claim 36-49;

b) The written description rejection of claims 38-39, 40 and 42-45 under 35

U.S.C. 112, first paragraph;

c) The rejection of claims 36-49 under 35 U.S.C. 112, second paragraph; and

d) The rejection of claims 36-49 under 35 U.S.C. 102(b) as being anticipated by Cavanaugh et al (1998).

***Response to Arguments***

4. Applicant's arguments with respect to claims 75-96 have been considered but are moot in view of the new ground(s) of rejection.

***New Grounds of Objection and Rejection***

***Specification***

5. The amendments filed May 5, 2006 and November 23, 2004 are objected to under 35 U.S.C. 132(a) because it introduces new matter into the disclosure. 35 U.S.C. 132(a) states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows:

a) Page 9, lines 14-16, recites wherein the method has been perfected for the use of measuring previously unrecited compounds such as fluorescein-conjugated annexin-V, fluorescein-conjugated avidin and fluorescein-conjugated insulin,

b) Pages 25-25 recite new matter drawn to the broad and additionally detailed descriptions of the methods steps, reagents and experiments not previously recited by the specification;

c) Page 35, lines 3-5 and the abstract now recites that results obtained from the standards used to calculate the amount of hapten-ligand in the membrane areas corresponding to the unknowns. Thus, the amount of hapten-ligand originally bound to the surface can be determined; and

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d) The amendment filed May 5, 2006 adds a paragraph to the specification, broadening the teachings the solutions, reagents, components, membrane materials, antibodies, haptens, and devices not previously recited.

Applicant is required to cancel the new matter in the reply to this Office Action.

### ***Claim Objections***

6. Claim 88 is objected to because of the following informalities: Claim 88 has two periods. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 75-96 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. This is a new matter rejection.

The claims are drawn to a new method for the evaluation of ligand binding using recognizable hapten-conjugated ligands, comprising the instantly recited steps. Neither the originally filed specification nor originally presented claims provides support for the method, moreover, there is no support in the originally filed application for

ligands comprised in a mixture wherein the ligand does not possess the hapten; further separating and solubilizing a mixture to produce unknowns; or the additional steps and reagents now recited. Applicant did not point to support in the original specification for support. Applicant points to support in the amendment specification which stands objected to for presenting new matter. Moreover, applicant failed to specifically point to the identity or provide structural characteristics of such ligands, reagents and method steps. Thus, there appears to be no teaching of the newly recited method. Applicant has pointed to many pages of the amended specification for support of the amendment, however it appears that the entire original specification appears to fail to recite support for the newly recited method. Therefore, applicants must specifically point to page and line number of the original specification for support of the newly added amendments. Therefore, the new claims incorporate new matter and are accordingly rejected.

8. Claims 75-96 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

a) The preamble of the claim 75 is drawn to a new method for the evaluation of ligand binding using recognizable hapten-conjugated ligands, however the recited steps within the method comprise an application step; a waiting period; a removal step, a solubilization step, a preparation step; an application step; a detection step; and a determination step. There is no correlation between the evaluation of ligand binding to the determining the amount of hapten–ligand bound. Therefore, the goal of the preamble is not commensurate with the instantly recited steps.

b) Claim 75 is unclear, Step [h] recites producing a signal, it is unclear whether by what mechanism the signal was produced, i.e., by the inclusion of a label, enzymatic reaction or some other means. Thus the metes and bounds of the claim are unclear. Thus, appropriate correction is required to overcome the rejection.

c) The term "known quantity" in claim 75 is a relative term which renders the claim indefinite. The term " " is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. The metes and bound of the term is indefinite and it is unclear what the known quantities are. Therefore, appropriate correction is required by applicant to overcome the rejection.

d) Claims 79, 86, 89, 92 and 94-95 recite alternative limitations which are improperly expressed. Alternative expressions are permitted if they present no uncertainty or ambiguity with respect to the question of scope or clarity of the claims. One acceptable form of alternative expression, which is commonly referred to as a Markush group recites members as being "selected from the group consisting of A, B and C". Another acceptable form recites "selected from 1, 2, 3, or 4." Applicant may correct this by amending the claim to recite the appropriate language.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 75-96 are rejected under 35 U.S.C. 102(b) as being anticipated by Cavanaugh et al., (1998).

The claims are drawn to a new method for the evaluation of ligand binding using recognizable hapten-conjugated ligands, however the recited steps within the method comprise an application step; a waiting period; a removal step, a solubilization step, a preparation step; an application step; a detection step; and a determination step.

Cavanaugh et al., teach that transferrin, which is a ligand, binds to a specific cell surface receptor which binds two iron-saturated transferrin molecules and is responsible for the delivery of iron into cells either through internalization of iron-transferrin or activation of a plasma membrane that mediates the trans-plasma membrane transport of iron from transferrin (pages 48-49). The Materials and Methods teach a process for the evaluation of ligands binding using non-radioisotopic immunologically recognizable hapten-conjugated ligands. It is noted that conjugated ligands such as rat holo-transferrin can be purchased from commercial vendors (page 49). It is also noted that fluorescein-conjugated iron saturated (holo) human transferrin can be obtained from commercial sources. For the immunofluorescent detection of the cell surface transferrin, cells were grown on slides and primary antibody, anti-rat-Transferrin Receptor (TfR), or normal mouse IgG was added to the cells (page 49). Fluorescent-activated cell sorting (FACS) analysis was also performed wherein the cells were removed from culture plates; washed; and either normal mouse IgG or anti-rat-TfR was added to the cell and the cells were analyzed for fluorescence using a FACScan instrument (page 50).



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Affinity isolation of TfR using immobilized transferrin was taught (page 50). The transferrin was immobilized on cyanogens bromide activated agarose gel which was later washed (page 50). To reduce inherent bound transferrin, cells were incubated before analysis (page 50). The cells washed and then lysed in dishes (page 50). The lysate supernatant was combined an excess of transferrin agarose and incubated. It is noted that the lysing steps are equivalent to the claimed solubilization steps. The gel was later harvested, washed and the bound-cell-lysate proteins were released by exposure of the gel to nonreducing sodium dodecyl sulfate-polyacrylamide gel electrophoresis (SDS-PAGE) sample treatment (page 50). The sample was separated on a SDS-PAGE gel (page 50). This is equivalent to the claimed optional separation step comprised of electrophoreses and SDS-PAGE steps. Next the sample was blotted onto commercially available IMMOBILON membrane<sup>TM</sup> (page 50) which is a conventional transfer membrane. The membrane was incubated with a commercially available blocking solution containing streptavidin-horseradish peroxidase (HRP) (page 50). This teaches the instantly claimed blotting step. Then the membrane was washed and the HRP-enhanced chemiluminescence (ECL) substrate which is commercially available was applied and the light-emitting bands were detected and quantitated (page 50). Thus the detection of the blot-matrix associated labeled ligand was followed by luminescent techniques as required by the instant claims.

An additional procedure based on the affinity isolation of the TfR after biotinylation was used to quantitate cell-surface TfR in the cell lines (page 51). The cell surfaces were biotinylated, lysed and the resulting solubilized cell material was exposed

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to the immobilized transferrin (page 51). The agarose-transferrin preferentially bound to biotin-TfR in the lysate which was released with SDS-PAGE separation followed by electrotransfer and detection of biotinylated bands by incubation of the Western blot with streptavidin-HRP followed by ECL (page 51 and figure 5). Thus Cavanaugh et al., teach conjugated immunologically recognized groups, the same blotting methods, followed by luminescent methods or other detection methods based on streptavidin enzymes or traceable entities as instantly claimed.

Since the Patent Office does not have the facilities for examining and comparing applicants' process with the method of the prior art reference, the burden is upon the applicants to show an unobvious distinction between the material structural and functional characteristics of the claimed process of the prior art. See In re Best, 562 F.2d 1252, 195 USPQ 430 (CCPA 1977) and In re Fitzgerald et al., 205 USPQ 594.

Therefore, Cavanaugh et al., teach a method for the evaluation of ligand binding using recognizable hapten-conjugated ligands, however the recited steps within the method comprise an application step; a waiting period; a removal step, a solubilization step, a preparation step; an application step; a detection step; and a determination step using the same steps and the same commercially available reagents having well known properties as instantly claimed.

### ***Conclusion***

10. No claims allowed.

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ja-Na Hines whose telephone number is 571-272-0859. The examiner can normally be reached on Monday-Thursday and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's acting supervisor, A. Mark Navarro can be reached on 571-272-0861. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Ja-Na Hines   
September 16, 2006

  
MARK NAVARRO  
PRIMARY EXAMINER